



**Lower Platte River Basin  
Water Management Plan  
P-MRNRD Annual Data Collection  
and Reporting  
July 2016 – December 2017**

**DRAFT – March 1, 2018**

Prepared By:

Papio-Missouri River  
Natural Resources District  
8901 South 154<sup>th</sup> Street  
Omaha, NE 68138

Telephone: (402) 444-6222  
[www.papionrd.org](http://www.papionrd.org)

**Confluence of the Platte and Elkhorn Rivers**

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## 1.0 INTRODUCTION

The Pappio-Missouri River Board of Directors adopted the Lower Platte River Basin Water Management Plan (LPBWMP), dated October of 2017, on December 14, 2017. As part of the Lower Platte River Basin Coalition, the six other NRDs and the Nebraska Department of Natural Resources also approved the LPBWMP and agreed to cooperatively implement the plan per Interlocal Agreement #2.

The Lower Platte River Basin Water Management Plan recommends numerical limits for allowable new water depletions during the first 5-year increment of the plan (January 1, 2017 through December 31, 2021). The allowable new depletions for the first 5-year increment were divided by subbasin and further by individual NRD as documented in Table 4.2.

The LPBWMP calls for the annual tracking of allowable new depletions beginning July 1, 2016. The first reporting period of the Basinwide Plan first increment, according to Table 5.1, is July 1, 2016 through December 31, 2017. This report provides the data collected during this reporting period for the plan area within the Pappio-Missouri River NRD in accordance with Table 5.2.

## **2.0 JUNE 2016 – DEC. 2017 DATA COLLECTION**

Data collected and reported on water supplies and uses within the P-MRNRD include:

- Certified Irrigated Acres
- Co-mingled Groundwater and Surface Water Uses
- Municipal and Industrial Groundwater Uses
- New Groundwater consumptive uses
- Groundwater Use Transfers
- Water supply well permits granted
- Retirement of groundwater consumptive uses
- Water use flow meter date
- Water banking activities
- Stream flow accretion activities
- Groundwater elevation data
- Stream gage measurements on NRD maintained gages
- NRD regulations/management area activities
- New water depletions
- New data collected or model/study results

### **2.1 CERTIFIED IRRIGATED ACRES**

The P-MRNRD has not completed certification of irrigated acres within its Integrated Management Plan (IMP) or LPBWMP area, which includes all areas tributary to the Platte and Elkhorn Rivers (herein after referred to as the “plan area”). This plan area covers approximately 228,000 acres in Sarpy, Douglas and Washington counties. It is estimated that irrigated cropland comprises approximately 11% of this land area or 25,000 acres.

The P-MRNRD is proposing to complete the initial certification of irrigated acres within the next couple years. Since 2009, approximately 4,000 new irrigated acres which received a vaiance from the District under the requirements of LB 483 have been certified.

### **2.2 CO-MINGLED GROUNDWATER AND SURFACE WATER USE**

No data is collected on co-mingled groundwater and surface water use within the P-MRNRD.

## 2.3 MUNICIPAL AND INDUSTRIAL GROUNDWATER USES

The P-MRNRD has collected annual data on municipal uses within the plan area since 2015. This data is reported only for the municipal wells within our District and would not include Metropolitan Utilities District (MUD), Lincoln, or Fremont wells in adjacent counties. Data from commercial or industrial users who have their own individual water supply well is not collected at this time.

### Municipal Annual Water Use

Municipal Well Field	2016 Total Pumped (Ac-ft)	2017 Total Pumped (Ac-ft)	Notes
Papillion	4,326.2	4,661.1	
Lincoln	20,451.2	22,115.1	Includes only wells in P-MRNRD
MUD South	38,030.4	27,217.2	
MUD West	8,976.2	12,225.1	Includes only wells in P-MRNRD
Fremont	4,971.5	4,987.4	Includes only wells in P-MRNRD
Valley	334.4	469.3	
Springfield	170.8	183.8	
Gretna	1,052.0	1,267.4	
Arlington	217.4	231.3	
<b>TOTAL</b>	<b>83,501.6</b>	<b>73,357.7</b>	

The net consumptive use of municipal water is not tracked or estimated at this time as return flows to the Platte River tributaries are not reported or estimated. Municipal water pumped by MUD and Papillion would be considered a total consumptive use as it ends up as return flow to the Missouri River.

## 2.4 NEW GROUNDWATER CONSUMPTIVE USES

The only new groundwater consumptive uses that are accounted for by the P-MRNRD is the new irrigated acres which received a variance from the District under the prior requirements of LB 483 and our current IMP. Only one new well which added 11 new irrigated acres has been completed in the P-MRNRD since July 1, 2016. The depletions of these new irrigated acres are reported in Section 2.14.

## **2.5 GROUNDWATER USE TRANSFERS**

The P-MRNRD does not review or approve groundwater use transfers at this time. Therefore, no data is available.

## **2.6 WATER SUPPLY WELL PERMITS GRANTED**

The P-MRNRD did not require well permits for new high capacity wells during 2016 or 2017. Requirements for new water supply well permits within the District will begin March 1, 2018. See Section 2.13 for further details on new Groundwater Management Area rules and regulations.

## **2.7 RETIREMENT OF GROUNDWATER CONSUMPTIVE USES**

The P-MRNRD does not review or collected information on groundwater use retirements at this time. According to the NDNR Registered Well Database, only domestic or monitoring wells were abandoned within the plan area since July 1, 2016. This indicates the retirement of groundwater consumptive uses would be negligible over this reporting period.

## **2.8 WATER USE FLOW METER DATA**

The P-MRNRD does not require or collect data from flow meters at this time. Therefore, no data is currently available.

## **2.9 WATER BANKING ACTIVITIES**

The P-MRNRD does not operate or maintain any available water banks at this time. Therefore, no data is available.

## **2.10 STREAMFLOW ACCRETION ACTIVITIES**

There are no ongoing projects in the P-MRNRD to augment surface water flow or conjunctively manage groundwater and surface water. Ongoing studies relevant to conjunctive management of surface and groundwater between the Platte and Elkhorn Rivers is discussed in Section 2.15.

## **2.11 GROUNDWATER ELEVATION DATA**

Groundwater level measurements were collected at 31 locations within the plan area during the spring of 2016. Some sites have been measured since 1978. In general, groundwater level data for the IMP area shows a standard deviation between 0 and 2 feet. This years Spring 2016 measurements were generally in line with that standard deviation experiencing changes from the average of -1 to +3 feet.

Similarly, groundwater level measurements were collected for 35 locations within the plan area during the spring of 2017. Figure 1 displays the rise or decline as a percentage of saturated thickness for each groundwater level measurement location.

## **2.12 STREAM GAGE MEASUREMENT ON NRD MAINTAINED GAGES**

The P-MRNRD does not own or operate any stream gages within our IMP area that are independent of data collected by USGS or NDNR.

## **2.13 NRD REGULATIONS/MANAGEMENT AREA ACTIVITIES**

No changes were made to the P-MRNRD's Groundwater Management Plan (GMP) or Rules and Regulations during this reporting period. The P-MRNRND had no designated Groundwater Management Areas (GMAs) during this time. A new GMP, along with associated regulations and GMAs, was approved in February 2018. New rules which will become effective March 1, 2018 include:

- Water Supply Well Permits will be required for all new high capacity wells (>50 gpm) within the NRD.
- In addition to minimum state requirements, a 600 foot well spacing will be required between all new high capacity well and any other registered water supply well.
- Flow meters will be required within the hydrologically connected area of the IMP by March 1, 2023.

## **2.14 NEW WATER DEPLETIONS**

The P-MRNRD requires the issuance of a variance to expand irrigated acres in the plan area. This data is input into the accounting method for estimating depletions as described on page 28 of the LPBWMP.

The P-MRNRD received and approved only 1 variance to expand a total of 11 irrigated acres in the plan area during the reporting period (see Table 1), July 1, 2016 to December 31, 2017, see Figure 2. The registration of any new wells during this time period was used a check to verify that any new uses actually received a variance. The only other well registered in the plan area during this time was a replacement well and it was verified with the owner prior to developing the well that he was not increasing irrigated acres.

**Table 1. July, 2016 through December 31, 2017 Variances to Expand Irrigated Acres**

Application Number	Year	Acres	Status	Registered Well
V-0052	2017	11	Complete	G-184028

The new annual depletion for this use is:

$$(11 \text{ acres}) * (6.534 \text{ in}) * (1/12 \text{ in/ft}) * (0.852134) * (0.3) = 1.53 \text{ AF}$$

It is the P-MRNRD's understanding that increases of municipal use for municipalities with transfer permits, including MUD and Lincoln, were already accounted for before allowed depletions were calculated. Increases in use by other municipalities or industry will be researched by the Basin Coalition and accounted for after the first increment.

The balance of allowable new depletion for the P-MRNRD between January 1, 2018 and December 31, 2021 is approximately 867 AF, down from 869 AF.

## 2.15 NEW DATA COLLECTED OR MODEL/STUDY RESULTS

The P-MRNRD is engaged in several ongoing studies with other NRDs and agencies within the Lower Platte Basin.

One such study effort is the Lower Platte River Consortium spearheaded by the Lower Platte South NRD in partnership with Lower Platte North NRD, City of Lincoln, MUD, and NDNR. The objective of the consortium is to develop a Drought Mitigation Plan for the Lower Platte River. See documentation available at: <http://www.lpsnrd.org/Consortium/PlatteConsortium.htm>

Another effort is an ongoing USGS study sponsored by the P-MRNRD and Lower Platte North NRD to monitor groundwater and surface water conditions in the combined Platte and Elkhorn River Valley. See available USGS data to date at: [https://www.usgs.gov/centers/n-water/science/groundwatersurface-water-interaction-near-confluence-elkhorn-and-lower?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/centers/n-water/science/groundwatersurface-water-interaction-near-confluence-elkhorn-and-lower?qt-science_center_objects=0#qt-science_center_objects).

### **3.0 REVISIONS TO THE PLAN**

There are no anticipated revisions to the plan at this time. The P-MRNRD will need to document and prepare revisions to its Integrated Management Plan with NDNR in order to incorporate the allowable depletion values per the LPBWMP.

### **4.0 COALITION BUDGET AND MEMBER CONTRIBUTIONS**

The P-MRNRD has \$20,000 budgeted for support of the coalition this fiscal year (before July 1, 2018)

## FIGURES

# 2017 Static Groundwater Elevation Rise or Decline Percent of Saturated Thickness

0 3.5 7 14 Miles

POR Average Depth minus Spring 2017 Depth (ft)

- -6.0 - -3.0 ft
- -3.0 - 0.0 ft
- 0.0 - 2.5 ft
- 2.5 - 5.0 ft
- 5.0 - 10.0 ft

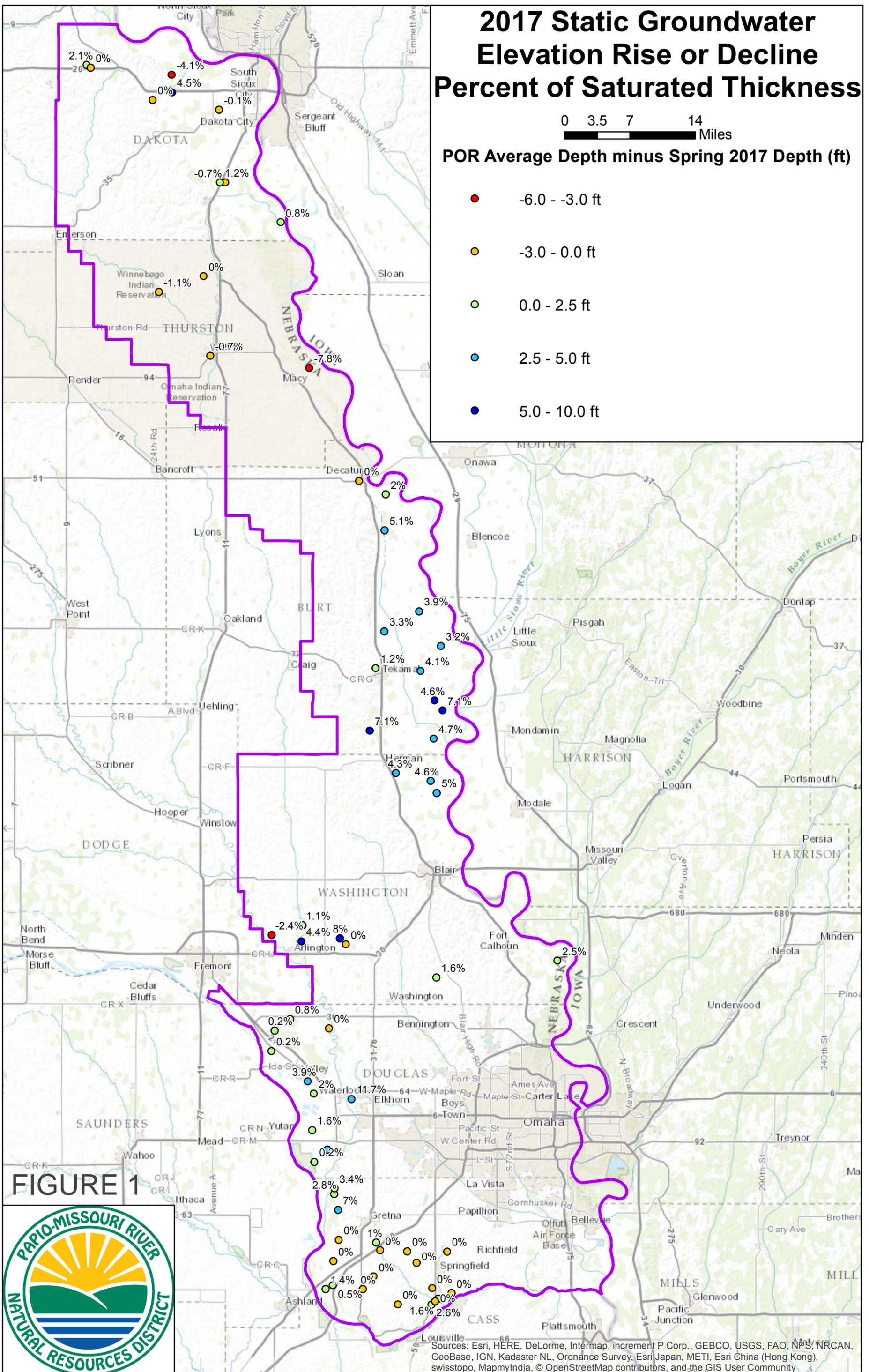


FIGURE 1



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

